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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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24272	7590	08/11/2005	EXAMINER	
Gregory J. Koerner Redwood Patent Law 1291 East Hillsdale Boulevard Suite 205 Foster City, CA 94404			THOMAS, ERIC W	
			ART UNIT	PAPER NUMBER
			2831	

DATE MAILED: 08/11/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/817,074

Applicant(s)

MITCHELL ET AL.

Examiner

Eric W. Thomas

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-78 is/are pending in the application.
- 4a) Of the above claim(s) 27-38 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-26, 39-41, 44-47, 50 and 54-78 is/are rejected.
- 7) ☒ Claim(s) 14, 42, 43, 48, 49 and 51-53 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/05, 4/04</u> | 6) <input type="checkbox"/> Other: _____ |

Election/Restrictions

1. Applicant's election of invention I in the reply filed on 5/16/05 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-8, 10-13, 18-26, 39-40, 46, 54- 62, 64-73, 75, and 78 are rejected under 35 U.S.C. 102(b) as being anticipated by Bogaki et al. (US 6,614,646).

Regarding claim 1, Bogaki et al. disclose an energy storage device comprising a mix of carbon and binder particles (see fig. 3 & col. 3 lines 45-60, 65-67 col. 4 lines 1-22). The mix (being formed from a dry process) would be "recyclable."

Regarding claim 2, Bogaki et al. disclose at least some of the mix is dry fibrillized.

Regarding claim 3, Bogaki et al. disclose the mix consisting of no processing additive (see col. 4 lines 8-11).

Regarding claim 4, Bogaki et al. disclose an energy storage device comprising a film, the film including a mix of particles (see fig. 3). The limitation, "at least some of the particles are recycled particles" is a method of forming the device (electrode). The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 5, Bogaki et al. disclose the particles are fibrillized (col. 4 lines 8-11).

Regarding claim 6, Bogaki et al. disclose the particles are fibrillized (col. 4 lines 8-11).

Regarding claim 7, Bogaki et al. disclose the film is a self-supporting film (see fig. 3, and abstract).

Regarding claim 8, Bogaki et al. disclose the film comprises a thickness as low as 150 micrometers.

Regarding claim 10, Bogaki et al. disclose the film is coupled directly against a substrate (40).

Regarding claim 11, Bogaki et al. disclose the film comprises no processing additive (col. 4 lines 12-13).

Regarding claim 12, Bogaki et al. disclose the substrate comprises an aluminum foil collector.

Regarding claim 13, Bogaki et al. disclose the product comprises a collector, and wherein the film is coupled directly against a surface of the collector.

Regarding claim 18, Bogaki et al. disclose at least some of the particles comprises fibrillizable fluoropolymer and carbon particles (col. 3 lines 45-55).

Regarding claim 19, Bogaki et al. disclose the carbon particles comprises activated carbon particles and conductive particles (see example 1).

Regarding claim 20, Bogaki et al. disclose at least some of the particles comprise thermoplastic particles.

Regarding claim 21, Bogaki et al. disclose an energy storage product, comprising: a dry mix of dry binder and dry carbon particles, the particles formed into a continuous self-supporting electrode film without the substantial use of any processing additives (see col. 4 lines 11-13 – discloses a lubricant may be added to the mixture (not required)). The mix (being formed from a dry process) would be “recyclable.”

Regarding claim 22, Bogaki et al. disclose the processing additives include hydrocarbons, high boiling point solvents, antifoaming agents, surfactants, dispersion aids, water, pyrrolidone, mineral spirits, ketones, naphtha, acetates, alcohols, glycols, toluene, xylene, and/or Isopars.

Regarding claim 23, Bogaki et al. disclose at least some of the dry binder comprises a dry fibrillized binder (col. 4 lines 19-23).

Regarding claim 24, Bogaki et al. disclose the claimed invention. The limitation, "the binder is fibrillized by a high-pressure gas" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 25, Bogaki et al. disclose the claimed invention. The limitation, "the high-pressure comprises a pressure of more than 60 PSI" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 26, Bogaki et al. disclose the claimed invention. The limitation, "the gas comprises a water content of less than about 20 PPM" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 39, Bogaki et al. disclose a capacitor, comprising; a plurality of dry processed particles, the dry processed particles including binder and conductive particles. The limitation, "recycled binder and conductive particles" is a method of forming the device (electrode). The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has

not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965).

Regarding claim 40, Bogaki et al. disclose at least some of the dry processed particles are formed as a self-supporting dry electrode film (abstract).

Regarding claim 46, Bogaki et al. disclose the claimed invention. Regarding "the dry processed particles are compacted into a dry self-supporting electrode film by a single pass compaction device" is a method of forming the device. The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965).

Regarding claim 54, Bogaki et al. disclose an energy storage device comprising one continuous self-supporting intermixed film structure comprised of carbon binder particle, the film structure consisting of about zero parts per million process additive (see col. 4 lines 8-11). The limitation, "reused carbon binder particles" is a method of forming the electrodes (reused particles). The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965).

Regarding claim 55, Bogaki et al. disclose the additive is selected from the group consisting of hydrocarbons, high boiling point solvents, antifoaming agents, surfactants, dispersion aids, water, pyrrolidone, mineral spirits, ketones, naphtha, acetates, alcohols, glycols, toluene, xylene, and Isopars.

Regarding claim 56, Bogaki et al. disclose wherein the intermixed film structure is an electrode film.

Regarding claim 57, Bogaki et al. disclose the film structure is an energy storage device electrode film.

Regarding claim 58, Bogaki et al. disclose the electrode film comprises a capacitor electrode film.

Regarding claim 59, Bogaki et al. disclose an energy storage device comprising a housing (not numbered in fig. 5); a collector, the collector having an exposed surface; an electrolyte, the electrolyte disposed within the housing an electrode film, the electrode film comprised of particles, wherein the electrode film is impregnated with the electrolyte and wherein the electrode film is coupled directly to the exposed surface. The limitation, "recycled particles" is a method of forming the device (particles). The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 60, Bogaki et al. disclose the electrode film is substantially insoluble in the electrolyte.

Regarding claim 61, Bogaki et al. disclose the electrode comprises a binder, wherein the binder is substantially insoluble in the electrolyte.

Regarding claim 62, Bogaki et al. disclose the binder comprises a thermoplastic, and wherein the thermoplastic couples the electrode film to the collector.

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Regarding claim 64, Bogaki et al. disclose one self-supporting (abstract), wherein the one electrode film is both conductive and adhesive, and wherein the one electrode film is coupled directly to a current collector. The film formed from a dry mix of particles (being formed from a dry process) would be “recyclable.”

Regarding claim 65, Bogaki et al. disclose an energy storage device comprising one or more self-supporting dry process based electrode film. The film formed from a dry mix of particles (being formed from a dry process) would be “recyclable.”

Regarding claim 66, Bogaki et al. disclose the film comprises conductive and adhesive particles.

Regarding claim 67, Bogaki et al. disclose the adhesive particles comprise a thermoplastic.

Regarding claim 68, Bogaki et al. disclose the electrode is a capacitor electrode.

Regarding claim 69, Bogaki et al. disclose a collector; and a dry process based electrode film, wherein the electrode film is coupled to the collector wherein the electrode film comprises conductive particles and binder particles. The limitation, “recycled particles” is a method of forming the device (particles). The method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965)

Regarding claim 70, Bogaki et al. disclose between the collector and the electrode film there exists only one distinct interface.

Regarding claim 71, Bogaki et al. disclose the binder particles comprise a thermoplastic.

Regarding claim 72, Bogaki et al. disclose the conductive particles comprise conductive carbon.

Regarding claim 73, Bogaki et al. disclose the electrode film further comprises activated carbon.

Regarding claim 75, Bogaki et al. disclose an energy storage device structure, comprising: a plurality of recyclable dry processed carbon and binder particles formed as an electrode, wherein as compared to an electrode formed of a plurality of substantially similar carbon and binder particles processed with a processing additive, the intermixed dry processed carbon and binder particles comprises less residue (inherent feature – same composition – same property).

Regarding claim 78, Bogaki et al. disclose an energy storage device, comprising: dry process recyclable electrode means for providing electrode functionality in an energy storage device.

5. Claims 39, 41 are rejected under 35 U.S.C. 102(e) as being anticipated by Penneau et al. (US 2003/0175494).

Penneau et al. disclose a capacitor, comprising; a plurality of dry processed particles, the dry processed particles including binder and conductive particles (example 1). The limitation, “recycled binder and conductive particles” is a method of forming the device (electrode). The method of forming the device is not germane to the issue of

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patentability of the device itself. Therefore, this limitation has not been given patentable weight. In re STEPHENS, WENZL, AND BROWNE, 145 USPQ 656 (CCPA 1965).

Regarding claim 41, Penneau et al. disclose a current collector (aluminum – metalized - supercapacitor see paragraph 141), wherein the dry processed particles are bonded to the current collector, and wherein the current collector comprises aluminum.

6. Claim 50 is rejected under 35 U.S.C. 102(e) as being anticipated by Takahashi et al. (US 6,912,116).

Takahashi et al. disclose in fig. 2, a capacitor, the capacitor comprising a plurality of reusable particles (231); a collector (21); the collector having two sides; and two electrode film layers, the two electrode film layers (23) comprised of the reusable particles (231), wherein a first electrode film layer is bonded directly onto a first surface of the collector, and wherein a second electrode film layer is bonded directly onto a second surface of the collector.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogaki et al. (US 6,614,646) in view of Tennet (US 2003/0030963)

Bogaki et al. disclose the claimed invention except for the film comprises a length of at least 1 meter.

Tennet teaches that it is common in the electric double layer capacitor art to form an electrode having a length of 1 meter.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the capacitor electrode of Bogaki et al. having a length of at least 1 meter, since such a modification would increase the surface area of the capacitor electrode and allow for said electrode to be formed in a wound configuration.

10. Claims 44-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogaki et al. (US 6,614,646).

Regarding claim 44, Bogaki et al. disclose the claimed invention except for the capacitor is rated to operate at a maximum voltage of 3.0 volts or less. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the capacitor to have a maximum operating voltage of 3.0 volts or less, since it has been held that where the general conditions of a claim are disclosed in the prior art,

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discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 45, Bogaki et al. disclose the claimed invention except for the dry electrode comprises a density of about 0.50 to 0.70 g/cm². It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the dry electrode having a density of about 0.50 to 0.70 g/cm², since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

11. Claim 63 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogaki et al. (US 6,614,646) in view of Shinozaki et al. (US 2002/0096661).

Bogaki et al. disclose the claimed invention except for the electrolyte is an acetonitrile type electrolyte.

Shinozaki et al. teach that acetonitrile type electrolytes are known in the electric double layer capacitor art. It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the acetonitrile type electrolyte of Shinozaki et al. in the capacitor of Bogaki et al., since acetonitrile is an electrolyte having a high conductivity, and it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

12. Claims 76 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bogaki et al. (US 6,614,646) in view of JP 4-88619.

Bogaki et al. disclose a capacitor comprising a continuous compacted self-supporting dry electrode film comprised of a dry mix of dry binder and dry carbon particles the film is coupled top a collector.

Bogaki et al. disclose the claimed invention except for the collector is shaped into a roll wherein said collector is disposed within a sealed aluminum housing. The mix (being formed from a dry process) would be "recyclable."

'619 discloses a capacitor comprising an electrode formed on a current collector wherein the collector and electrode are wound and disposed within an aluminum housing.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to roll the electrode and current collector of Bogaki et al. and deposit it into an aluminum housing as taught by '619, since such modification would increase the surface area of the electrode (increased length) and would provide a sturdy housing that protects the capacitor element from an external environment.

Regarding claim 77, Bogaki et al. disclose the dry electrode film comprises substantially no processing additive.

13. Claim 74 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogaki et al. (US 6,614,646) in view of Saito et al. (US 5,706,165).

Bogaki et al. disclose the claimed invention except for the conductive metal comprise a metal.

Saito et al. teach that it is known in the capacitor art to form electrodes using a conductive metal filler.

Bogaki et al. disclose a capacitor comprising a continuous compacted self-supporting dry electrode film comprised of a dry mix of dry binder and dry carbon particles the film is coupled top a collector.

Bogaki et al. disclose the claimed invention except for the collector is shaped into a roll wherein said collector is disposed within a sealed aluminum housing. The mix (being formed from a dry process) would be "recyclable."

'619 discloses a capacitor comprising an electrode formed on a current collector wherein the collector and electrode are wound and disposed within an aluminum housing.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to roll the electrode and current collector of Bogaki et al. and deposit it into an aluminum housing as taught by '619, since such modification would increase the surface area of the electrode (increased length) and would provide a sturdy housing that protects the capacitor element from an external environment.

Regarding claim 77, Bogaki et al. disclose the dry electrode film comprises substantially no processing additive.

13. Claim 74 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bogaki et al. (US 6,614,646) in view of Saito et al. (US 5,706,165).

Bogaki et al. disclose the claimed invention except for the conductive metal comprise a metal.

Saito et al. teach that it is known in the capacitor art to form electrodes using a conductive metal filler.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to use the conductive metal filler of Saito et al. as the conductive agent in the electrode of Bogaki et al., since such a modification would increase the conductivity of the electrode.

Allowable Subject Matter

14. Claims 14, 42-43, 48-49, 51-53 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach or fairly suggest (taken in combination with the other claimed features) wherein one film is calendered directly against one side of the collector (claim 14), a capacitor wherein the dry processed particles are bonded to the separator (claims 42-43); the current collector is coupled to the housing by a laser weld (claims 48-49); the two electrode film layers comprise no processing additives (claims 51-52); and the film layers comprise substantially zero residues (claim 53).

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric W. Thomas whose telephone number is 571-272-1985. The examiner can normally be reached on Monday - Friday 5:30 AM - 2:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 571-272-1984. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ewt

 8-5-05
ERIC W. THOMAS
PRIMARY EXAMINER